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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/846,671	04/30/97	KO	K 11675.114

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IM52/0619

EXAMINER

GOUDREAU, G

ART UNIT	PAPER NUMBER
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1763

19

DATE MAILED: 06/19/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 08-846671

Applicant(s) Ko

Examiner George Goudreau

Group Art Unit 17

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 (MONTH(S)) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on (2-01' to 3-01)' (i.e. - papers # 17-18)
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-10, 12-14, 16-20, 24-38, 40-44, 46, 50-52, 54 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-10, 12-14, 16-20, 24-38, 40-44, 46, 50-52, 54 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 17
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

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15. This action will not be made final due to the new grounds of rejection.
16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikegami et. al. (1991').

Ikegami et. al. disclose a process for selectively rie etching a PSG layer to SiO₂ layer in a plasma comprised of CF₄-CHF₃-Ar. They employ a high density, parallel plate, rie etcher to conduct their etching process. This is discussed on pages 1556-1561. This is shown in figures 1-7.

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 1-10, 12-14, 16-20, 24-38, 40-44, 46, 50-52, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 17 above.

The reference as applied in paragraph 17 above fail to disclose the following aspects of applicant's claimed invention:

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- the specific formation of a via in a PSG layer by selectively etching a PSG layer to an underlying SiO₂ layer using a patterned photo resist etch mask;
- the specific formation of a SAC through a PSG ILD layer which covers gates on a wafer in which the gates are capped with SiO₂, and have SiO₂ sidewall spacers;
- the specific formation of the gates on a wafer out of W polycide; and
- the specific etch process parameters which are claimed by the applicant

It would have been obvious to one skilled in the art to form a SAC by etching a via through a doped ILD layer which covers gates on a wafer using a patterned photo resist etch mask based upon the following. The formation of SAC by etching a via through a doped ILD layer which covers gates on a wafer using a patterned photo resist etch mask is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.)

It would have been obvious to one skilled in the art to fabricate the gates on the wafer out of W polycide in the process taught above based upon the following. The formation of gates on a wafer out of W polycide is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, the specific usage formation of gates on a semiconductor wafer out of W polycide simply represents the usage of an alternative, and at least equivalent means for forming a gate on a semiconductor wafer to the usage of other means for forming the gate.

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It would have been obvious to one skilled in the art to cap the gates with a SiO₂ layer, and to form spacers on the sides of the gates which are made out of SiO₂ based upon the following. The capping of gates with a SiO₂ layer, and the formation of SiO₂ sidewall spacers on the sides of gates is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, it would have been desirable to protect the gates on a wafer by encapsulating them in SiO₂ (i.e.-SiO₂ cap with SiO₂ sidewall spacers).

It would have been obvious to one skilled in the art to selectively etch a via in a PSG ILD layer to an underlying gate which is protected by a SiO₂ capping layer, and SiO₂ sidewall spacers using a patterned photo resist etch mask, and a plasma comprised of CF₄-CHF₃-Ar based upon the following. Ikegami et. al. teach that it is desirable to selectively etch a PSG layer to a SiO₂ layer using a plasma comprised of CF₄-CHF₃-Ar. Further, the formation of a SAC by forming a via in a PSG ILD layer which covers a gate on a wafer wherein the gate is protected by a SiO₂ capping layer, and SiO₂ sidewall spacers is conventional or at least well known in the semiconductor processing arts for reasons previously stated of record.

It would have been prima facie obvious to employ any of a variety of different etch process parameters in the etching processes taught above including those which are specifically claimed by the applicant. These are all well known variables in the plasma etching art which are known to effect both the rate and quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undue experimentation which would be indicative of a showing of unexpected results.

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Alternatively, it would have been obvious to one skilled in the art to employ the specific etch process parameters which are claimed by the applicant based upon In re Aller as cited below.

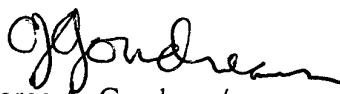
"Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific etch process parameters which are claimed by the applicant are result effective variables whose values are known to effect both the rate, and the quality of the plasma etching process.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -308-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.


George A. Goudreau/gag

Examiner AU 1763